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Amendment to the Claims:

1. (Currently Amended): A process for liquefying starch comprising contacting a thermostable, acid-stable alpha-amylase obtained by culturing *Bacillus acidocaldarius* with an aqueous slurry or solution of the starch having a pH as low as 3.0, the contacting occurring at an elevated a temperature from about 90-155° C without adjusting the pH of the slurry or solution of the starch, and producing a liquefact having a pH of about 4.0 to 4.5 and DE of about 10-12 within 60-75 minutes after adding the amylase.

2. (Original): The process of claim 1 wherein the contacting occurs without adding a calcium salt to the slurry or solution.

Claim 3 – 5 (Cancelled)

6. (Currently Amended): The process of ~~claim 3~~ claim 1, wherein the contacting act further comprises maintaining the contact at the elevated temperature for about 5-8 minutes.

7. (Previously Amended): ~~The process of claim 1 wherein the elevated~~
temperature is about 105-110° C.

8. (Original): The process of claim 7 wherein the contacting act occurs as a single liquefaction step.

9. (Original): The process of claim 8 further comprising providing at least about 150 ASAA units/g of the thermostable, acid-stable alpha-amylase.

10. (Currently Amended): The process of ~~claim 3~~ claim 1 further comprising, prior to the act of contacting, cooking the aqueous slurry or solution of the starch between about 140-155° C for about 5-8 seconds and then reducing the temperature of the cooked slurry or solution to about 90-98° C.

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11. (Original): The process of claim 10 wherein the contacting occurs between the thermostable, acid-stable alpha-amylase and the cooked slurry or solution at about 90-98° C for about 60-90 minutes.

12. (Original): The process of claim 11 wherein the contacting act occurs as a single liquefaction step.

13. (Original): The process of claim 12 further comprising providing 1.0 to 10 ASAA units/g of the thermostable, acid-stable alpha-amylase.

14. (Currently Amended): The process of ~~claim 3~~ claim 1, wherein the contacting further comprises first and second contacting acts, the first contacting act occurring at about 105-110° C for 5-8 minutes, and the second contacting act occurring at about 95-98° C.

15. (Original): The process of claim 14 further comprising utilizing about 10-35 ASAA units/g of the alpha-amylase in the first contacting act and utilizing about 1-10 ASAA units of the alpha-amylase in the second contacting act.

16. (Original): The process of claim 14 wherein the first and second contacting acts occur as two liquefaction steps.

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17. (Currently Amended): A process for liquefying a starch slurry comprising the following acts:

- (a) providing a thermostable, acid-stable α -amylase prepared from a *Bacillus acidocaldarius* species;
- (b) adding the alpha-amylase to a starch slurry having a pH between about 3.0 – 5.0; and
- (c) heating a mixture obtained from step (b) to at least 90° C until a starch liquefact having a pH of about 4.0-4.5 and a DE of about 10-12 DE is obtained within 60 to 75 minutes after adding the amylase, wherein acts (b) and (c) occur without adjusting the pH of the starch slurry.

18. (Original): The process of claim 17 wherein acts (b) and (c) occur without adding a calcium salt to the starch slurry.

Claims 19 - 20 (Cancelled):

21.(Currently Amended): The process of ~~claim 19~~ claim 17 wherein act (c) occurs at about 90-155° C.

22. (Currently amended): The process of ~~claim 19~~ claim 17 wherein act (c) further comprises heating the mixture for about 5-8 minutes.

23. (Original): The process of claim 22 wherein the mixture is heated to about 105-110° C in act (c).

24. (Original): The process of claim 23 wherein act (c) occurs as a single liquefaction step.

25. (Original):The process of claim 24 wherein act (b) further comprises adding at least about 140 ASAA units/g of the thermostable, acid-stable alpha-amylase to the starch slurry.

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26. (Original): The process of claim 17 further comprising prior to act (b), the act of cooking the starch slurry between about 140-155° C for about 5-8 seconds and then reducing the temperature of the cooked slurry or solution to about 90-98° C prior to adding the alpha-amylase.

27. (Original): The process of claim 26 wherein act (c) further comprises holding the mixture at about 90-98° C for about 60-90 minutes.

28. (Original): The process of claim 27 wherein act (c) occurs as a single liquefaction step.

29. (Original): The process of claim 28 wherein act (b) further comprises adding 1.0 to 5.0 ASAA units/g of the thermostable, acid-stable alpha-amylase.

30. (Original): The process of claim 17 wherein act (c) comprises two heating acts, a first heating act occurring at about 105-110° C for 5-8 minutes, and a second heating act occurring at about 95-98° C.

31. (Original): The process of claim 30 wherein act (b) further comprises adding about 10-35 ASAA units/g of the alpha-amylase, and act (c) further comprises adding 1-10 ASAA units of the alpha-amylase in the second heating act.

32. (Original): The process of claim 30 wherein the first and second heating acts occur as two liquefaction steps.

33. (Currently amended): A single liquefaction step process for starch comprising the following acts:

- (a) providing a starch slurry having a pH as low as about 3.0 and a thermostable, acid-stable alpha-amylase obtained from *Bacillus acidocaldarius*;
- (b) mixing the alpha-amylase and the starch slurry; and

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(c) heating the resulting mixture at at least 90° C until a liquefact having a pH of about 4.0 to 4.5 and a DE of about 10-12 DE is obtained within 60 to 75 minutes after mixing the amylase,

wherein acts (b) and (c) occur without adjusting the pH of the starch slurry.

34. (Original): The process of claim 33 wherein acts (b) and (c) occur without adding a calcium salt to the starch slurry.

Claims 35 – 36 (Cancelled):

37. (Original): The process of claim 33 wherein act (c) occurs at about 90-155° C.

38. (Original): The process of claim 33 wherein act (c) further comprises heating the mixture for about 5-8 minutes.

39. (Original): The process of claim 38 wherein the mixture is heated to about 105-110° C in act (c).

40. (Original): The process of claim 39 wherein act (b) further comprises adding at least about 140 ASAA units/g. of the thermostable, acid-stable alpha-amylase to the starch slurry.

41. (Original): The process of claim 33 further comprising prior to act (b), the act of cooking the starch slurry between about 140-155° C for about 5-8 seconds and then reducing the temperature of the cooked slurry or solution to about 90-98° C prior to adding the alpha-amylase.

42. (Original): The process of claim 41 wherein act (c) further comprises holding the mixture at about 90-98° C for about 60-90 minutes.

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43. (Previously Amended): A starch liquefaction method comprising the acts of:

(a) providing a starch slurry having a pH as low as 3.0 and an thermostable, acid-stable alpha-amylase capable of hydrolyzing starch at a pH as low as 3.0, the alpha-amylase cultured from *Bacillus acidocaldarius*;

(b) mixing the starch slurry and about 150 ASAA units/g of the alpha-amylase without adjusting the pH of the starch slurry; and

(c) jet cooking the mixture resulting from step (b) for about 5-8 minutes at about 105-110°C to obtain a liquefact having a DE of approximately 10-12 within 60-75 minutes after mixing the amylase.

44. (Previously Amended): A starch liquefaction method comprising the acts of:

(a) providing a starch slurry having a pH as low as 3.0 and an thermostable, acid-stable alpha-amylase capable of hydrolyzing starch at a pH as low as 3.0, the alpha-amylase cultured from *Bacillus acidocaldarius*;

(b) jet cooking the starch slurry between about 140-155° C for about 5-8 seconds without adjusting the pH of the starch slurry;

(c) lowering the temperature of the cooked slurry from step (b) to about 95-98 C° and adding about 1.0 to 5.0 ASAA units/g ds of the alpha-amylase; and

(d) allowing the mixture of step c) to undergo hydrolysis for about 60-90 minutes to produce a liquefact having a DE of about 10-12 within 60 to 75 minutes after adding the amylase.

45. (Previously Amended): A starch liquefaction method comprising the acts of:

(a) providing a starch slurry having a pH as low as 3.0 and an thermostable, acid-stable alpha-amylase capable of hydrolyzing starch at a pH as low as 3.0, the alpha-amylase cultured from *Bacillus acidocaldarius*;

(b) mixing the starch slurry with about 10-30 ASAA units/g ds of the alpha-amylase without adjusting the pH of the starch slurry;

(c) jet cooking the mixture resulting from step (b) for about 5 minutes;

(d) adding about 1-5 ASAA units/g ds of the alpha-amylase to the jet cooked mixture from step (c); and

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(e) continuing liquefaction at about 95-98 ° C for as little at 30-90 minutes to obtain a liquefact having a DE of approximately 10-12 within 60-75 minutes after adding the amylase.

46. (Currently Amended): A starch liquefact made by the process of ~~claim 3~~ claim 1, the liquefact characterized as having a pH of about 4.0 to 4.5, free of maltulose and suitable for saccharification without inactivation of the thermostable, acid-stable alpha-amylase ~~and/or~~ and without adjustment of the about 4.0 – 4.5 pH of the liquefact.

47. (Currently Amended): A starch liquefact made by the process of claim 17, the liquefact characterized as having a pH of about 4.0 to 4.5, free of maltulose and suitable for saccharification without inactivation of the thermostable, acid-stable alpha-amylase ~~and/or~~ and without adjustment of the about 4.0 – 4.5 pH of the liquefact.

48. (Currently Amended): A starch liquefact made by the process of claim 33, the liquefact characterized as having a pH of about 4.0 to 4.5, free of maltulose and suitable for saccharification without inactivation of the thermostable, acid-stable alpha-amylase ~~and/or~~ and without adjustment of the about 4.0 – 4.5 pH of the liquefact.

49. (Currently Amended): A starch liquefact made by the process of claim 43, the liquefact characterized as having a pH of about 4.0 to 4.5, free of maltulose and suitable for saccharification without inactivation of the thermostable, acid-stable alpha-amylase ~~and/or~~ and without adjustment of the about 4.0 – 4.5 pH of the liquefact .

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50. (Currently Amended): A starch liquefact made by the process of claim 44, the liquefact characterized as having a pH of about 4.0 to 4.5, free of maltulose and suitable for saccharification following thermal inactivation of the thermostable, acid-stable alpha-amylase in the liquefact ~~and/or~~ and without adjustment of the about 4.0 – 4.5 pH of the thermally inactivated liquefact .

51. (Currently Amended): A starch liquefact made by the process of claim 45, the liquefact characterized as having a pH of about 4.0 to 4.5, free of maltulose and suitable for saccharification following thermal inactivation of the thermostable, acid-stable alpha-amylase in the liquefact ~~and/or~~ and without an adjustment of the about 4.0 – 4.5 pH of the thermally inactivated liquefact.

Claim 52. Cancelled.

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